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ABSTRACT

Over the past 50 years, brain researchers have stated that human beings probably use less than 1 percent of the brain's potential, and research findings about human intelligence have transformed almost all previous definitions of intelligence. This booklet addresses the following key findings in intelligence research: intelligence is not fixed or static; intelligence can be learned and taught; and intelligence is a multidimensional phenomenon that occurs at multiple levels of the brain/mind/body system. After this discussion of the research, the publication is divided into five parts: (1) "Overview of the Seven Intelligences" (verbal/linguistic, logical/mathematical, visual/spatial, body/kinesthetic, musical/rhythmic, interpersonal intelligence, and intrapersonal intelligence); (2) "Teaching for Multiple Intelligences: A New Look at the Curriculum" (includes an exercise on how one can teach for multiple intelligences in one's curriculum); (3) "New Instructional Methods for Teaching with Multiple Intelligences"; (4) "Teaching about Multiple Intelligences: Re-inventing the Learning Process"; and (5) "A Multi-Modal Approach to Assessment" (includes techniques for student evaluation and teacher self-assessment). (Contains 27 references.) (LL)

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Teaching for Multiple Intelligences

David G. Lazear

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DAVID G. LAZEAR

David G. Lazear is the founder of New Dimensions of Learning, an organization in Chicago that offers training programs and materials for educators on classroom applications of the theory of multiple intelligences, the topic of this fastback. His international experience includes designing and conducting staff-development programs in some 25 nations. He also is facilitator of the ASCD Multiple Intelligences Network, a group that links educators around the world interested in learning about and sharing ideas on applications of multiple intelligences in the classroom.

Lazear and his family have lived for extended periods in Africa, India, Italy, and Korea, where he provided leadership in implementing human development projects in rural villages. This exposure to different cultures, with often very different ways of knowing and perceiving, was a major factor leading to his interest in the theory of multiple intelligences.

Lazear's publications include *Seven Ways of Knowing: Teaching for Multiple Intelligences* (Skylight Publishing, 1991) and *Seven Ways of Teaching: The Artistry of Teaching with Multiple Intelligences* (Skylight Publishing, 1991).

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Teaching for Multiple Intelligences

by
David G. Lazear

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Introduction

To introduce you to the concept of multiple intelligences, I invite you to take the following True-False Quiz.

Instructions: For each of the following statements, mark a T if the statement is true and an F if it is false.

_____ I may not be tapping the full learning potential of my students.

_____ I sometimes wonder why certain students don't get it, even when I'm doing my best teaching.

_____ I feel that many of my students know more about a topic than they demonstrate on the tests I give.

_____ I have noticed that some of my students are highly skilled in areas that are not included in the curriculum I have to teach.

_____ When I'm teaching, I often feel my students "tune me out" or seem to be "operating on a different wave length."

_____ I worry that my teaching doesn't seem to stimulate my students enough, so they have a hard time "getting on board" with their education.

_____ I have trouble keeping my students motivated and actively involved in the learning process.

_____ I often feel that I am in competition with TV, videos, rock music, and sports for the minds of my students.

If you marked a T for any of these statements, this fastback will be of great interest to you!

Research Base of Multiple Intelligences

Have you ever wondered what might be possible if we could access more of the brain's potential? Over the last 50 years a number of brain researchers have stated that we probably use less than 1% of our brain's potential. This statement has been the catalyst for researchers from many disciplines to join in the exploration of the capacities of the human brain/mind system. These explorations have produced some astonishing discoveries that have called into question traditional notions about learning and human potential. And the research findings about human intelligence (how we know what we know, how we perceive, understand, and learn) have transformed almost all of our previous definitions of intelligence. Let us examine what this research tells us.

Key Findings in Intelligence Research

Intelligence is not a fixed or static reality. In the past, it was thought that one's intelligence was more or less set at birth by heredity and could be assessed through tests yielding a quantifiable intelligence quotient or IQ. The IQ, it was thought, would reveal what an individual's intelligence capabilities were. However, this idea of fixed intelligence did not take into account the wide variety of environmental, cultural, and socialization factors that affect the development of intellectual capacities. Many researchers now feel that intelligence may have been defined too narrowly and that it is a far more flexible/plastic phenomenon than previously thought. In fact, these researchers now are looking at intelligence as a capability that can be enhanced and amplified, something that is continually expanding and changing throughout one's life!

Intelligence can be learned and taught. Because intelligence capabilities have a neuro-biological base, mental functioning can be improved at any age and almost any ability level. There are a wide variety of exercises one can perform to strengthen and enhance intelligence

skills, much like what we do to improve and expand any skill (parallel parking, making a pie crust, or doing a jackknife dive). Generally, the more we practice the better we become. We can learn to be more intelligent in more ways and on more levels of our being than we ever thought possible!

Intelligence is a multi-dimensional phenomenon that occurs at multiple levels of our brain/mind/body system. There are many ways by which we know, perceive, learn, and process information. Howard Gardner, director of Harvard University's Project Zero, coined the phrase "multiple intelligences" to describe these multi-knowing capacities. His research suggests that we all possess at least seven intelligence areas or seven ways of knowing. Moreover, he believes there are probably many others we have not yet been able to test!

This fastback is based primarily on Gardner's research reported in his book, *Frames of Mind* (1985). Gardner's working definition of intelligence is:

> An intelligence entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting. The problem-solving skill allows one to approach a situation in which a goal is to be obtained and to locate the appropriate route to that goal. The creation of a cultural product is crucial to capturing and transmitting knowledge or expressing one's views or feelings. The problems to be solved range from creating an end to a story to anticipating a mating move in chess to repairing a quilt. Products range from scientific theories to musical composition to successful political campaigns.

The good news is that each of us has all of these intelligences (and probably many more), but not all of them are developed equally and thus we do not use them effectively. In fact, it is usually the case that one or two intelligences are stronger and more fully developed than the others. But this need not be a permanent condition. We have within ourselves the capacity to activate all of our intelligences. In so doing, extended worlds of sensing, feeling, and knowing are opened to us!

Logical/Mathematical Intelligence
Often called scientific thinking, this intelligence deals with deductive thinking/reasoning, numbers, and the recognition of abstract patterns.

Verbal/Linguistic Intelligence
This intelligence deals with words and language, both written and spoken. This form of intelligence dominates most Western educational systems.

Intrapersonal Intelligence
This intelligence deals with inner states of being, self-reflection, metacognition, and awareness of spiritual realities.

MULTIPLE INTELLIGENCE

Visual/Spatial Intelligence
This intelligence deals with the sense of sight and being able to visualize an object and create internal mental images/pictures.

Body/Kinesthetic Intelligence
This intelligence deals with physical movement and the knowings/wisdom of the body, including the brain's motor cortex, which controls bodily motion.

Interpersonal Intelligence
This intelligence operates primarily through person-to-person relationships and communication. It relies on all the other intelligences.

Musical/Rhythmic Intelligence
This intelligence deals with the recognition of tonal patterns, including various environmental sounds, and a sensitivity to rhythm and beats.

Overview of the Seven Intelligences

In this chapter we shall examine each of the intelligences in more detail, noting especially various ways to activate the full spectrum of our intelligence capacities.

Verbal/Linguistic Intelligence

We use our verbal/linguistic intelligence when we speak to each other, whether through a formal speech or informal conversation. We use it when we put our thoughts down on paper, create poetry, or simply write a letter to a friend. Verbal/linguistic intelligence is involved in story-telling and creating, in all forms of humor involving puns and other play on words, the unexpected ending in a joke, and various funny twists of language. It is involved in any use of metaphors, similes, and analogies, and, of course, in learning proper grammar and syntax in speaking and writing.

Exercises to Activate Verbal/Linguistic Intelligence:

- Learn the meaning of one interesting new word each day and practice using it in normal conversation with others.
- Get a book of word games and puzzles (crosswords, jumbles, etc.) or play language-oriented table games (Scrabble, Hangman, etc.).
- Watch a TV drama or detective story, then write your own sequel or tell what happens in the next episode.

- Talk with someone about his/her ideas or opinions. Ask questions, have a discussion, or engage in friendly debate.
- Make a presentation on a topic that interests and excites you a great deal (a hobby, a political viewpoint, a book you've read, or someone you know).

Logical/Mathematical Intelligence

You can see logical/mathematical intelligence in operation most clearly when you are involved in a situation that requires problem-solving or meeting a new challenge. It often is associated with what we call "scientific thinking." We use our logical/mathematical intelligence when we recognize abstract patterns, such as counting by twos or knowing if you've received the right change at the supermarket. It is used when we find connections or see relationships between seemingly separate and distinct pieces of information. Logical/mathematical intelligence is operating in the various patterns of thinking we use in our daily lives, such as list-making, setting priorities, or planning something for the future.

Exercises to Activate Logical/Mathematical Intelligence:

- Classify a group of 12 randomly gathered objects. See if you can create a rationale for organizing them; for example, by shape, colors, size, use, etc.
- Do a project that requires following step-by-step directions; for example, building something or cooking from scratch.
- Create a four-point outline telling about a movie you have seen with each of the points having four subpoints, and each subpoint having four more subpoints.
- Create a convincing, rational argument for something that is totally absurd; for example, the benefits of roller skates with square wheels.
- Create a sequence of numbers that have a hidden pattern. See if someone else can discover the pattern.

Visual/Spatial Intelligence

Visual/spatial intelligence can be seen in its purest form in the imagination of children, in such activities as day-dreaming, pretending to make oneself invisible, or imagining oneself to be on a journey to a faraway place. It is employed when we draw pictures to express thoughts/feelings or when we paint a room to create a certain mood. We use it when we successfully get someplace we want to go by using a map. Visual/spatial intelligence helps us win at chess, enables us to turn a blueprint on paper into a real object (a bookshelf or a dress), and allows us to visualize things we want, for example, new curtains and wallpaper for a bedroom.

Exercises to Activate Visual/Spatial Intelligence:

- Look at the clouds with a group of friends and see if you can find such things as animals, faces, or other objects hidden in the formations.
- Use your imagination and describe what it would be like living in a different period of history or pretend you are having a conversation with your hero/heroine, a character from literature, or a historical figure.
- Try to express an idea or feeling with clay, paints, or felt-tip markers. Use different images, shapes, patterns, designs, textures, and colors.
- Plan a scavenger hunt with friends. Make complex and interesting maps for each other to follow that will lead to the "treasure."
- Create a montage on a theme or idea that interests you by cutting out pictures from magazines and arranging them to convey what you want to say.

Body/Kinesthetic Intelligence

Body/kinesthetic intelligence could be seen in operation if you were given a typewriter with no markings on the keys and asked to type a letter. If you previously have learned how to type, your fingers would

"know" the keyboard; and you would produce the letter with little or no effort. The body knows how to do many things that are not necessarily known by the conscious mind; for example, riding a bike, parking a car, catching a football, or walking on a balance beam. Body/kinesthetic intelligence also involves the ability to use the body to express emotion through dance and other body movement or to convey ideas through charades and mime.

Exercises to Activate Body/Kinesthetic Intelligence:

- After a presentation, have everyone in the group express reactions to the presentation through a physical gesture or movement, body posture, or other form of body language.
- As you perform an everyday physical task, such as shoveling snow, washing dishes, or starting your lawnmower, see if you can become aware of what your body "knows" how to do and how it functions.
- Perform different physical activities, such as walking, dancing, or jogging, in a way that matches your mood. How would the physical activity change for a different mood?
- Practice using your non-dominant hand to perform any routine task, such as brushing your teeth, eating, buttoning a shirt, etc. See if you can "train" it to function better.
- Try using mime or charades to express an idea, opinion, or feeling.

Musical/Rhythmic Intelligence

We use our musical/rhythmic intelligence when we play music to calm ourselves when stressed or to stimulate ourselves when bored or when we have the "blahs." Many of us use the beat of music to attain a steady rhythm when jogging, vacuuming a rug, or typing a letter. Musical/rhythmic intelligence is involved when you hear a jingle on the radio and find yourself humming it over and over throughout the day. It is active when we use tones and rhythmic patterns (in-

strumental, environmental, and human sounds) to communicate how we are feeling. Examples are the sounds associated with intense joy, fear, and excitement or with expressions of religious devotion and patriotism.

Exercises to Activate Musical/Rhythmic Intelligence:

- Make a list of different types of recorded music you own or have access to. Listen to several minutes of each type and note how each affects you (feelings, images evoked, memories sparked, etc.).
- Think of something you want to remember or something you want to teach someone. Choose a well-known tune and write some simple lyrics to convey the information to be remembered or taught.
- Try expressing your feelings (fear, contentment, anger, exhaustion, exhilaration, etc.) through vocal sounds alone (not words). Experiment with different volumes, pitches, tones, and noises to communicate your feelings.
- Listen to the natural rhythmic patterns of your environment (coffee brewing, traffic flowing, wind blowing, rain beating on the window, etc.). Express what you feel from listening to these rhythms and beats.
- Read a story and embellish it with various sound effects, using music, rhythmic beats, and other sounds like the old-time radio shows used to do.

Interpersonal Intelligence

We experience interpersonal intelligence most directly whenever we are part of a team effort, whether it be a sports activity, a church committee, or a community task force. This intelligence utilizes our ability to engage in verbal and non-verbal communication and to notice distinctions among group members with regard to contrasts in mood, temperament, motivations, and intentions. Interpersonal in-

telligence allows us to develop a genuine sense of empathy and caring for each other. Through interpersonal intelligence we "stand in another's shoes," so to speak. It is a person-to-person way of knowing through which we maintain our individual identity but also become more than ourselves as we identify with and become a part of others.

Exercises to Activate Interpersonal Intelligence:

- With a partner sitting back to back with you, ask him or her to try to reproduce a complex shape or design you have drawn. Use the following rules: 1) you can give your partner only verbal instructions; 2) your partner may not look at your drawing; 3) your partner may ask you any question; and 4) you may not look at what your partner is drawing.
- Try different ways to express encouragement and support for other people; for example, by facial expressions, body posture, gestures, sounds, words, and phrases. Practice giving encouragement and support to others around you each day.
- Practice listening intently to another person. Cut off the "mind chatter" that usually occurs and force yourself to stay focused on what the person is saying. Ask relevant questions, make appropriate comments, paraphrase the person's thoughts to check your own understanding.
- Volunteer to be part of any kind of team effort and watch for examples of positive and negative team behavior. Positive behavior would be things that help the team work together and be successful.
- Try "disciplined people-watching," that is, speculating about what others are thinking and feeling, their background, profession, etc., based on such non-verbal clues as dress, gestures, voice tone, etc. If appropriate, check your accuracy with the person.

Intrapersonal Intelligence

Intrapersonal intelligence is the capacity to be introspective and self-reflective, that is, being able to step back and watch ourselves, almost like an outside observer. As far as we know, human beings are the only creatures with this capacity. Intrapersonal intelligence involves an awareness of the internal aspects of self, such as feelings, thinking processes, intuition, or spirituality. Both self-identity and the ability to transcend self are part of intrapersonal intelligence. When we experience a sense of unity, have an intuitive sense of our connection with the larger order of things, experience higher states of consciousness, feel the lure of the future, or dream of heretofore unrealized potentials in our lives, it is the result of our intrapersonal way of knowing.

Exercises to Activate Intrapersonal Intelligence:

- Make a "mood graph" showing the high points and low points, as well as points in between, of your day. Note the external events that contributed to the different moods.
- Evaluate your thinking strategies or patterns in different situations. For example, a problem arises when you are carrying out a well-thought-through plan, or a crisis occurs and you have to make a decision as to which of several options to follow.
- In the midst of a routine activity, attempt to be intensely aware of everything that is going on – your thoughts, feelings, physical movements, and inner states of being.
- Keep a daily reflective log in which you record your thoughts, feelings, ideas, insights, and important events of your day. Try a variety of media for recording your reflections, such as writing, drawing, singing, acting out, painting, or sculpting.
- Pretend you are an outside observer watching your thoughts, feelings, and moods. Notice different patterns that seem to kick in for certain situations: the anger pattern, the playfulness pattern, or the anxiety pattern.

This overview has presented the basic theory of multiple intelligences. Let us now turn to some of the practical implications of the theory for teaching and learning. First, we shall look at implications for the *curriculum*, examining approaches to different subject areas in which students use the full range of their intellectual potentials. Second, we shall examine *instructional methods* and suggest ways to integrate multiple intelligence strategies into daily classroom lessons. Third, we shall focus on the *learning process* itself, examining how students can learn about their own multiple intelligences and use them to achieve greater success in school. Finally, we shall explore some implications of the theory of multiple intelligences for *assessment* of both students' relative intelligence strengths/weaknesses and their academic progress.

Teaching for Multiple Intelligences: A New Look at the Curriculum

The "Multiple Intelligences Capacities Chart" on page 21 presents a categorization of different capacities or skills that function within the seven intelligences. Howard Gardner refers to these as "sub-intelligences." They represent a set of core capacities and, as such, can be developed consciously and improved through various kinds of exercises and practice.

These core capacities can be viewed as the "building blocks" necessary to utilize fully the various ways of knowing. Without them, the potential of a particular intelligence simply is not available to us. What would it be like to try to teach mathematical problem solving if your students did not have the skills of number sequencing, basic calculation, and pattern recognition? What would happen if you tried to teach language arts without your students possessing the skills of reading, writing, and verbal communication? The logical/mathematical or, in the second case, the verbal/linguistic ways of knowing would simply not be available to them.

While we as educators are more familiar with what skills it takes for students to learn language arts and mathematics, the same kind of careful skill instruction is needed for each of the intelligences. If students are to use the full spectrum of their intellectual capabilities, they must be explicitly taught the skills of each intelligence in much

the same manner as we currently teach students the alphabet, counting, vocabulary, arithmetic operations, etc. So, if we want them to develop their visual/spatial capacities, they must be taught such things as use of active imagination, graphic representation, image manipulations, and finding one's way around a given location. If we want them to use their musical/rhythmic intelligence, they must learn to recognize various sounds and tones and be able to produce those tones in different rhythmic patterns.

It is important to note here that the intelligences capacities listed on the chart have nothing whatsoever to do with what is commonly referred to as *talent* (musical, artistic, mathematical, athletic, etc.). *We all possess all seven ways of knowing.* We use them to acquire knowledge, understand our world, engage in problem solving, create works of art, and meet the challenges in our daily lives. Of course, in every society there are some noteworthy individuals who have developed the various ways of knowing that we all possess to a high level and thus are considered talented.

In thinking about the implications of multiple intelligences for the curriculum, it is this author's opinion that the fine arts and other so-called "extracurricular" activities should be the last to be cut when schools face financial difficulties. It is often through these "extras" of the curriculum that students learn to use their various intelligence skills and capacities. In fact, a strong case can be made for integrating the fine arts into every curriculum area. Following are four examples of how various fine arts components might be embedded in traditional curriculum content.

Social Studies. In social studies, students can learn the music, dance, and art of a particular culture by doing it, not just by reading about it. They can study and enact the dramas and stories that are part of the heritage of a culture. Or they can write their own dramas/stories mimicking the literary style of a culture but using modern-day themes. They can learn the science of a culture and perform various experiments that led to important scientific discoveries and inventions.

21

Multiple Intelligences Capacities Chart

VERBAL/ LINGUISTIC

- Understanding order and meaning of words
- Convincing someone of a course of action
- Explaining, teaching and learning
- Humor
- Memory and recall
- Meta-linguistic analysis

LOGICAL/ MATHEMATICAL

- Abstract pattern recognition
- Inductive reasoning
- Deductive reasoning
- Discerning relationships and connections
- Performing complex calculations
- Scientific reasoning

VISUAL/SPATIAL

- Perceiving from different angles
- Recognizing spatial relationships
- Graphic representation
- Image manipulation
- Finding your way in space
- Forming mental images
- Active imagination

BODY/KINESTHETIC

- Control of voluntary movements
- Control of pre-programed movements
- Expanding body awareness
- Mind/body connection
- Mimetic abilities
- Improved body functions

MUSICAL/RHYTHMIC

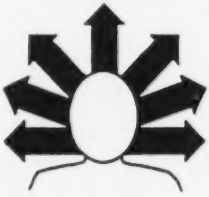
- Structure of music
- Schemas for hearing music
- Sensitivity to sounds
- Creating melody/ rhythm
- Sensing qualities of a tone

INTERPERSONAL

- Creating and maintaining synergy
- Sensing perspective of others
- Working cooperatively in a group
- Making distinction among others
- Verbal/non-verbal communications

INTRAPERSONAL

- Concentration of the mind
- Mindfulness
- Metacognition
- Awareness and expression of different feelings
- Transpersonal sense of the self
- Higher order thinking/reasoning



Math. Have students learn math facts and concepts through art (drawing/painting math operations or sculpting them in clay). Have them write story problems and answers in limerick form. Use graphic organizers to visualize different math processes (comparing/contrasting, rank ordering, sequencing, etc.). Study the mathematical patterns that are part of music and dance. Learn geometric formulas through physically embodying them by role playing or creative dance.

Science. Have students use their active imagination to become part of certain scientific processes and/or reactions (osmosis, photosynthesis, magnetic attraction, etc.). Have them draw or paint what they see under a microscope. Have them perform lab experiments in cooperative groups. Teach them to "track" their scientific thinking patterns, such as predicting, determining cause and effect, comparing/contrasting. Study the science of sound and music and its effect on the body. Have students keep a reflective log to record their questions and new self-understandings through science.

Language Arts. Have students write and perform a dramatic skit in which the characters are parts of speech, punctuation marks, or parts of a sentence. Ask students to use their active imaginations by becoming a character in a story they are reading. Play word games such as "Pictionary" or charades. Involve the whole class in creating a mural or sculpture about a story or play. Sing poetry to modern-day tunes, or compose a musical-rhythmic background to be played while a poem or story is read aloud.

How "Intelligent" Is Your Curriculum?

The above examples offer a brief look at how the various intelligences can be integrated into the curriculum. To get a better insight into how you can teach for multiple intelligences in your own curriculum, carry out the following exercise using the "Curriculum Analysis Worksheet" on page 23. You also will need to use the "Multiple Intelligences Capacities Chart" on page 21.

CURRICULUM ANALYSIS WORKSHEET

	Where Currently Taught	New Opportunities to Teach
Verbal Linguistic Intelligence		
Logical/Mathematical Intelligence		
Visual/Spatial Intelligence		
Body/Kinesthetic Intelligence		
Musical/Rhythmic Intelligence		
Interpersonal Intelligence		
Intrapersonal Intelligence		

New Instructional Methods for Teaching with Multiple Intelligences

Two major assumptions underlie my thinking on teaching with multiple intelligences: 1) We can teach *all* students to be more intelligent in many more ways and on more levels than we ever thought possible. 2) We can (and should) teach *anything* using all of the intelligences. If these assumptions are accurate, then teachers have some important homework to do in order to learn how to use all of the intelligences in the teaching/learning process.

Teaching with multiple intelligences falls into four general stages, which are described below.

Stage 1: Awakening the Intelligences. Since each intelligence has a neurological and biological base, we can activate them by performing certain brain/mind exercises. The goal of the *awakening* stage is to stimulate specific areas of the brain/mind/body system, thus "waking up" certain intelligence capacities that may be dormant.

For example, if you want to activate visual/spatial capacities, the simple act of of passing out colored markers, paints, crayons, or clay often will do the job. If you want to trigger body/kinesthetic capacities in a lesson, any kind of physical movement, including dance, will suffice. In many ways, the specific media used to activate an intelligence serve as a message to latent intelligence capacities in the brain to wake up and get ready for action.

In this stage the first goal is to develop an awareness that we do, in fact, possess multiple ways of knowing and learning. The second

goal is to learn techniques for awakening or "turning on" the different intelligences within the brain/mind/body system.

Stage 2: Amplifying the Intelligences. Each of the intelligences can be enhanced, strengthened, and improved. In some ways, intelligence capacities are like any skill; the more we practice the better we become. The goal of the *amplifying* stage is to develop or strengthen intelligence areas in which one is uncomfortable or weak.

For example, to improve students' interpersonal intelligence capacities they first must be taught such relational skills as listening, encouraging others, and reaching consensus, and then be given opportunities to practice them. If you want students to amplify their musical/rhythmic capacities, they must be given opportunities to work on developing recognition of different sounds, practicing matching a rhythmic pattern or tune, or learning to express emotions through sound alone.

In this stage the goal is to learn how particular intelligences function and how to work on improving them. Also, we must understand what the different capacities/skills of the intelligences are, how to access them, and how to use them effectively.

Stage 3: Teaching with the Intelligences. Once an intelligence has been awakened and its skills learned, we can now use that intelligence for gaining information and acquiring knowledge. The goal of the *teaching* stage is to present lessons using different ways of knowing in order to master academic material.

For example, students can learn the meaning of an unfamiliar word such as *accelerate* by using a physical activity in which a student begins running slowly and then increases the pace to a sprint (body/kinesthetic). You can teach the structure of a molecule by having students make clay models that show the different parts (visual/spatial). Or students can learn the states and their capitals by creating a rap or song (musical/rhythmic).

Remember that about 95% of the material we have to teach comes pre-packaged in a verbal/linguistic or a logical/mathematical form.

However, in planning lessons, we need not be bound by this packaging. Lessons can (and should) be designed using all seven ways of knowing.

Stage 4: Transferring the Intelligences. The final stage is integrating all the intelligences into one's daily living. This includes learning how to apply the intelligences in solving problems and meeting challenges in the world beyond the classroom. The goal of the *transferring* stage is to make the intelligences a part of one's cognitive, affective, and sensory repertoire for living.

For example, once students have learned how to succeed in a cooperative learning situation, the same skills can be transferred to the family for improving relationships and cooperation among family members (interpersonal). Or the use of reflective logs in the classroom can be transferred to keeping a daily/weekly journal at home where one reflects on life in general (intrapersonal).

Integrating the Multiple Intelligences into Lessons

When planning daily lessons, a useful aid is the "Multiple Intelligences Toolbox" on page 27. By referring to the listing under each of the intelligences, you can easily make *anything* you have to teach into a multiple intelligences lesson. It also can be used as an aid for brainstorming multiple intelligences possibilities for a given lesson.

The following exercise will help you apply the things discussed in this chapter to your own classroom situation. It involves planning several lessons using as many of the intelligences in the tool box as possible. This does not mean that each lesson must include all seven of the intelligences, but try to use at least two or three beyond the verbal/linguistic intelligence that characterizes most traditional lessons.

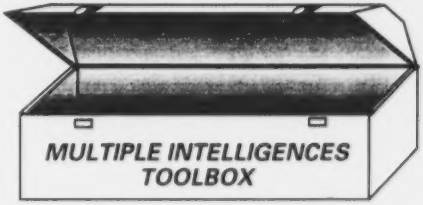
1. Make a list of five to ten upcoming lessons that you will be teaching over the next four weeks. If you are an elementary teacher, try to get a spread of subject areas (math, language arts, science, social studies, etc.).

VERBAL/ LINGUISTIC
- Reading
- Vocabulary
- Formal speech
- Journal/diary keeping
- Creative writing
- Poetry
- Debate
- Impromptu speaking
- Humor/jokes
- Storytelling

LOGICAL/ MATHEMATICAL
- Abstract symbols/ formulas
- Outlining
- Graphic organizers
- Number sequences
- Calculation
- Deciphering codes
- Showing relationships
- Syllogisms
- Problem solving
- Pattern games

VISUAL/ SPATIAL
- Guided imagery
- Active imagination
- Color schemes
- Patterns/designs
- Painting
- Drawing
- Mind-mapping
- Pretending
- Sculpture
- Pictures

BODY/KINESTHETIC
- Folk/creative dance
- Role playing
- Physical gestures
- Drama
- Martial arts
- Body language
- Physical exercise
- Mime
- Inventing
- Sports/games



MUSICAL/RHYTHMIC
- Rhythmic patterns
- Vocal sounds/tones
- Music composition/ creation
- Percussion vibrations
- Humming
- Environmental sounds
- Instrumental sounds
- Singing
- Tonal patterns
- Music performance

INTERPERSONAL
- Giving feedback
- Intuiting others' feelings
- Cooperative learning
- Person-to-person communication
- Empathy practices
- Division of labor
- Collaboration skills
- Receiving feedback
- Sensing others' motives
- Group projects

INTRAPERSONAL
- Silent reflection methods
- Metacognition techniques
- Thinking strategies
- Emotional processing
- "Know thyself" procedures
- Mindfulness practices
- Focusing/concentration skills
- Higher-order reasoning
- Complex guided imagery
- Centering practices

Multiple Intelligences Lesson Ideas Matrix

	History	Language Arts	Science
Verbal/Linguistic	Debate key controversial historical decisions for today.	Write a modern-day sequel to a classical piece of literature.	Tell others how to perform an experiment and have them do it.
Logical/Mathematical	Trace the patterns of historical development in the West.	Predict what will happen next in a story.	Apply the accepted steps of the scientific method.
Visual/Spatial	Create murals that tell the story of a historical period.	Illustrate a piece of literature with color, images, and patterns.	Draw patterns/images to illustrate different natural processes.
Body/Kinesthetic	Act out great moments from the past for modern times.	Play charades to guess what piece of literature or author I am.	Act out sun/planetary rotation.
Musical/Rhythmic	Learn about various periods of history by analyzing their music.	Illustrate a piece of literature with music, sound, and rhythm.	Make a music tape to accompany different scientific processes.
Interpersonal	Team members learn about one aspect of a historical period and teach each other.	Practice joint storytelling/writing with a partner.	Assign teams to do lab experiments and report to class.
Intrapersonal	Imagine having dialogues with figures from the past.	Write a reflection on what you learn for life today from literature.	Keep a diary on discoveries about the self in science.

Global Studies	Mathematics	Practical Arts	Fine Arts
Conduct a nations of the world "spelling and finding bee."	Write story problems in teams for other teams to solve.	Explain to another how to make something.	Write critical analyses of famous art, music, and drama.
Analyze a culture's development chronologically.	Play "Math Jeopardy" and explain operations for finding answers.	Follow a recipe to make baked goods from scratch.	Use graphic organizer to analyze a scene/character in a play.
Study other cultures through their painting and sculpture.	Work with manipulatives to learn math operations.	Create posters which show steps of an exercise routine.	Have imaginary conversations with classical pieces of art.
Learn to play games that are popular in different cultures.	Physically embody geometry formulas/fractions of a whole.	Invent something new and teach others how to use it.	Create "living" painting/sculpture of an idea or feeling.
Learn about cultures through their music and rhythm.	Write math operations, formulas, and problem-solving raps.	Use music to improve computer keyboard skills.	Learn math concepts embedded in musical/dance pieces.
Conduct interviews with people from different cultures.	Partners teach each other processes and apply to problems.	Teach and play a series of non-competitive games.	Choreograph a dance about human relating and caring.
Brainstorm gifts of different cultures for the individual self.	Think/write about how math concepts help in daily living.	Note your moods/feelings when working on a computer.	Write a reflection on personal tastes in art, music, dance, drama.

2. From your list select three lessons to work with for this exercise. Try to choose them for a variety of reasons; for example, an easy one, a difficult one, or one that you find boring.

3. Turn to the "Multiple Intelligences Toolbox" and begin working with the easy lesson. For each intelligence, select one tool that seems appropriate to the particular content of the lesson and that you feel will help you approach the lesson in a new way.

4. Once you have chosen the tool from each of the seven intelligences, take a piece of paper and write the objective of the lesson at the top. Then below it, write the name of the tool from each intelligence area and describe briefly how you will use it to achieve the objective of the lesson. For starters, look at the "Multiple Intelligences Lesson Ideas Matrix" on pages 28 and 29.

5. Complete the lesson plan by listing the required materials, supplies, room arrangement, etc.

6. Now repeat the process for the other two lessons you selected from your list. Each time you go through the toolbox, try to use a different set of tools around which to plan your lesson. This will help you become more familiar with the toolbox ideas and how to use them for planning lessons.

7. Finally and most important of all, make a commitment to carry out the lessons you have designed!

The good news about teaching with multiple intelligences is that it is not an "add-on" to what you are already teaching. You will not be teaching more "stuff" in an already overstuffed curriculum. Rather, it is a new way of teaching, one that shows students how to use all of the intelligences to improve their effectiveness with classroom lessons and with the challenges of daily living.

Teaching About Multiple Intelligences: Re-inventing the Learning Process

As far as we know, only human beings have the capacity to be self-reflective, to step back and reflect on what they are doing, sometimes even altering their behavior in the midst of it. This capacity carries with it both the joy of freedom and the burden of responsibility. Once we become aware of something in our lives, we have the power to change it, if we so desire. This capacity for self-reflection is at the heart of helping students understand their own multiple intelligences, how to improve them, and how to consciously use them to enhance their own and others' lives.

Meta-Intelligence: Four Levels of Learning

There are basically four levels of what I call "meta-intelligence," the ways in which individuals become aware of the seven ways of knowing and learn how to use them more effectively. These levels are derived from current research on metacognition.

Level 1. After being introduced to the concept of multiple intelligences, a person might say, "I use the seven intelligences every day, I've just never called them that." This is called the "Tacit Level" of teaching/learning about multiple intelligences. It involves making students aware of the capacities they already have, which are generally taken for granted. We do many "intelligent" things each day without realizing how really clever we are! Think about what is involved in doing such things as crossing the street without getting hit, listening

to music to relax at the end of a day, making a list to remind you of what to buy at the supermarket, parallel parking, drawing a simple map to help someone get from one place to another, using body language to communicate feelings, telling and understanding jokes, or balancing a checkbook.

Below are some exercises at the Tacit Level designed to help students become aware of the seven intelligences and how much they are part of normal daily living.

1. People Search: Have students develop a list of questions about different skills/abilities related to the seven intelligences. Then have students interview each other to find people who are good at performing the various skills.

2. Self Report Card: Have students record information about themselves on an index card related to the seven intelligences; for example, describing a physical feat they can perform, drawing a picture of how they are feeling today, listing a favorite song they like to sing with friends, etc. Then have them share and discuss their report cards with other students, noting similarities and differences.

3. Wrap-Around Processing: At the end of a lesson, have students draw something, perform a physical movement or gesture, list three words, or think of a song/sound that expresses how they feel about the lesson just completed. Then have them share these items with the rest of the class.

Level 2. At this level a person might say, "Now that I have a label for the different ways of knowing, I am more conscious of when and how I use them." This is known as the "Aware Level" of teaching/learning about multiple intelligences. Once students can identify or name the intelligences, they can start to work on strengthening and improving them through practice. The Aware Level involves: 1) learning how each of the intelligences operates in the brain/mind/body system, and 2) evaluating one's own relative strengths and weaknesses in each of the intelligence areas. Once students have done this, they are consciously taking responsibility for their own intellectual

development. For example, if a student discovers that he or she is not very good at using the active imagination (visual/spatial capacity), the student should be given some practice exercises to improve or strengthen this capacity.

Below are some exercises at the Aware Level designed to help students observe and analyze their intelligences in operation.

1. Seven-in-One Activities: Have students figure out how to accomplish some taken-for-granted tasks in at least seven different ways; for example, the routine for going to the lunch room, straightening up the classroom at the end of the day, or organizing the class for a game during recess.

2. Each One Teach One: Have students individually rank themselves on their strongest and weakest intelligences. Match "strengths" with "weaknesses" and have the stronger student work with the weaker to improve a skill using the intelligence in question; for example, teaching another a short-cut method for doing long division.

3. Think-Pair-Share: Have students work in pairs and tell each other about times they have used each of the seven intelligences. One speaks and the other listens, then they reverse roles. Each pair then joins another pair. Each partner now tells the foursome about their partner's experiences with the seven intelligences.

Level 3. At this level a person will say, "Not only do I know about the seven intelligences, but I know when and how to use each one effectively." This is called the "Strategic Level" of teaching/learning about multiple intelligences. This level encompasses the two previous levels, along with the conscious decision to employ the seven intelligences on a regular basis to enhance learning, expand creativity, and improve problem solving. An example of functioning at this level is when one student assists another student who is having difficulty with a math story problem by showing how to "translate" the problem into another intelligence modality, which is the preferred or stronger intelligence of the student who is having difficulty. A student operating at this level will consciously approach a problem using

a variety of ways to solve it, including drawing, talking with others, acting it out, thinking about it, or trying to visualize a solution.

Below are some Strategic Level exercises designed to help students become good "intelligence strategists."

1. Problem Solving Using Multiple Approaches: Give students a complex problem to solve that potentially engages the full spectrum of the intelligences. Then give them instructions and materials and ask them to use as many of the seven intelligences as possible to solve it.

2. Intelligence Access Tracking: Have students brainstorm ways of "triggering" or stimulating the different intelligences. Then have each individually rank the triggers from "the ones that work best for me" to "the ones that may work for others but do nothing for me." Discuss when and how to use these triggers in daily classroom lessons.

3. Multiple Intelligence Coaching: Group students heterogeneously in terms of intelligence strengths. Give them an activity that potentially engages the full spectrum of intelligences; for example, inventing something, telling/reading a story, etc. Then ask group members to coach each other in how to carry out the activity using several intelligences.

Level 4. At this level a student can say, "I am learning how to use the seven intelligences to help me in my daily life." This is called the "Reflective Level" of teaching/learning about multiple intelligences. The goal at this level is to learn how to integrate the seven ways of knowing into one's daily repertoire for living. Any problem, project, or goal can be approached using the seven intelligences. And if we are "cooking on more burners," so to speak, we can function at greater levels of creativity and inventiveness than if we use only one approach. Moreover, using the seven intelligences not only makes learning more fun but also broadens and deepens one's knowledge base; for now something is known and understood in at least seven ways, not just one!

Below are some Reflective Level exercises designed to help students take their intelligence beyond the classroom and into the world.

1. Improving Intelligence Use: For each intelligence, set up two categories: 1) When do I most like to use each intelligence? 2) In what situations do I most need to use each intelligence? Have students list under each category things they can do to improve or strengthen the intelligences for themselves.

2. Journals and Logs: Have students make a daily journal/log entry on the seven ways of knowing using such lead-ins as: "The intelligence that I used most today was _____." "The intelligence I had the most trouble using today was _____." "A key thought I had about my intelligences today is _____."

3. Daily Intelligence Focus: At the beginning of a week, have students designate each day as an intelligence emphasis day. Then each day encourage them to do everything they can to consciously use and/or learn about the intelligence emphasis for the day. For example, try an innovative approach to a mundane task using an intelligence not usually involved; or try expressing thoughts and opinions in unique/creative ways that go beyond talking, writing, and logic.

A Multi-Modal Approach to Assessment

A major concern in teaching about multiple intelligences is the assessment of students' relative strengths and weaknesses in the seven intelligence areas as well as their academic progress. Continuing assessment is important because, as mentioned earlier, intelligence is not fixed but rather a dynamic, continually evolving process throughout one's life.

Assessment is important in order to: 1) help students develop a fuller spectrum of intellectual capacities to use in the classroom and in their lives beyond the classroom; 2) find new strategies for helping students use their stronger intelligences to succeed in school; and 3) use a student's skill in one intelligence area to strengthen a weakness in another.

Howard Gardner talks about assessment of the intelligences in terms of constructing an "intelligence profile" on students. This is somewhat akin to putting together a jigsaw puzzle. No single piece of the puzzle gives you the whole picture. Only when all the pieces are together do you see the whole. This is the job of figuring out what makes each student "tick" in terms of how they best know, understand, perceive, and learn. Gardner believes that with about 10 hours of careful observation of students involved in various activities and learning tasks, we can get a fairly accurate intelligence profile of them. We then can use this information to help them master their studies, help them deal with everyday problems and challenges, and give them vocational guidance counseling later in their educational journey.

Following are five assessment techniques for putting together an intelligence profile on your students. They require that you carefully observe students, using the seven intelligences as a screen, as they are engaged in a variety of learning tasks.

1. *Student Intelligence Watch:*
   - Make a checklist of behaviors that serve as indicators of students' preferred/strong intelligences. Examples might be doodling, being physically active, incessant questioning, strong peer relations, silent and reflective activity.
   - Keep a record of these intelligences behavior observations for two to three weeks.
   - Analyze your findings looking for consistent behavior patterns.
   - Make notes about what you have learned about each student's different ways of knowing.

2. *Intelligence Skill Games:*
   - Set up several different "game stations" around the classroom using games that require different intelligence skills (crossword puzzles, jumbles, "Pictionary," charades, "Twister," "Trivial Pursuit," etc.)
   - Let students choose which game they want to play, paying attention to which one they choose.
   - Carefully watch what they do as they play the game. (Remember, how they play the game can be as instructive as which game they choose.)
   - Repeat this a number of times, keeping a log of your observations.

3. *Intelligence Attention Foci:*
   - Show students a film that dramatically utilizes all the intelligences (a great soundtrack, complex interpersonal relationships, physical action, clever problem solving, vibrant colors, symbolism, great dialogue, etc.).

- Afterward, lead students in a discussion on what they liked/disliked on the sound track, dialogue, memorable scenes, use of symbols, summary of what it was all about, etc.
- Listen carefully to where students focused their attention or what captured their imagination. See if you can discern different intelligences operating as students watch the same performance.

4. *Complex Problem Solving:*
- Give students a problem scenario with enough complexity that several intelligences are stimulated in an effort to find a solution.
- Give them time to work on the problem, encouraging them to do anything they want to find a solution (drawing, talking to each other, getting out of their seats, etc.).
- Carefully watch them in the act in problem solving. What are they doing? (Remember, for building an intelligence profile of your students, how they approach the problem is far more important than getting the "right" answer.)

5. *Inventing:*
- Assign students a special project that requires them to design or create something.
- Set up different work stations around the classroom, each having the tools, materials, and media of a different intelligence (paints, clay, colored marking pens at one station; drums, rattles, a guitar, and harmonica at another station, etc.).
- Give students time to create whatever they want and however they want to do it.
- Watch them carefully as they work, noting both the work station to which they are initially drawn and what they do once they are involved in the act of creation.

Assessing Academic Progress Using Multiple Intelligences

The second area of assessment involves using multiple intelligences techniques to evaluate students' academic progress. The intent here

is to gain a holistic picture of what students know – beyond what can be demonstrated on the typical paper-and-pencil test. (Students usually know a lot more than can be shown on most of the tests we give.) The following five assessment techniques all move beyond paper-and pencil testing. This is not to suggest that there is something wrong with paper-and-pencil tests, but they should not be used as the sole assessment tool for determining what a student knows or has learned in a given lesson or unit.

1. *Student Portfolios*. Have students develop individual portfolios containing a representative sample of work they have produced during a term. These should be items that demonstrate progress toward established curriculum goals. Let them decide what to put in their portfolios but encourage them to include items that give evidence of how their thinking has changed during the term, items that show an improvement in skills, items that demonstrate increased self-reflection and/or growth in self-knowledge, and items that represent their best work.

2. *Student Journals/Logs*. Provide students with a special notebook. At the end of a lesson or unit, give them time to express their thoughts/reflections about the lesson by writing, drawing, making up a song, writing a poem, or recording a conversation they had with a friend. For example, ask them to think about what they have been studying and its meaning and reflect on how they can use it beyond the classroom situation. Or have them do a "before" and "after" lesson entry, expressing how what they studied has been important in the past and how it will be important in the future.

3. *Multi-Modal Testing Instruments*. Experiment with non-traditional ways for students to demonstrate their knowledge of a topic that go beyond verbal/linguistic and logical/mathematical ways of knowing. For example, a math test might involve body/kinesthetic ways of knowing in which students would use body movement such as dance; or a science test might involve visual/spatial ways of knowing such as drawing and sculpting as the primary means by which students demonstrate what they have learned.

4. *Intelligence Exercises and Practices*. Provide occasions for students to explore their own multiple intelligences. Lead them in exercises where they learn how to activate or trigger each intelligence. Teach them practices for strengthening and improving their weaker intelligences. Give them opportunities to use the intelligences in daily classroom work. Help them discover ways to use the intelligences beyond the classroom. In short, do anything that will help them develop their full intellectual potential and to be intelligent in as many ways as possible.

5. *Intelligence Transfer Strategies*. Create strategies to help students gain the knowledge of a lesson using many different ways of knowing. Use their stronger intelligences to train the weaker ones. For example, a child who is weak in grasping math concepts may understand them better if the concepts are put to music/rap; or students who are weak in language arts skills may be helped if they can act things out or draw them. Then create strategies to help them "translate" their knowledge into the intelligence forms most valued by our culture (and standardized tests), namely, verbal/linguistic and logical/mathematical.

Assessing Your Own Teaching for Multiple Intelligences

To conclude this chapter on assessment, I invite you to do the following exercise, which will give you an opportunity to assess your own intelligence strengths and weaknesses and thus become more aware of how you may be helping or hindering your students from learning.

Directions:

1. On the "Self-Analysis Chart" on page 42, rank yourself on a scale of 0 to 10 in the space under each of the intelligences by responding to the following six statements. (Suggested rankings at each end of the 0 to 10 scale are given as guidelines, but trust your first intuitive response.)

1. Everyday Use: "I tend to use this intelligence in my personal life *most* (ranking of 9-10), *least* (ranking of 1-0) every day."
2. Lesson Ideas: "I find it *easy* (ranking of 9-10), *difficult* (ranking of 1-0) to think of lesson ideas using this intelligence."
3. Comfort Zone: "I feel very much *at home* (ranking of 9-10), *uncomfortable* (ranking of 1-0) when asked to work with this intelligence."
4. Teaching Style: "I tend to use this intelligence in my daily classroom teaching *frequently* (ranking of 9-10), *rarely* (ranking of 1-0)."
5. Fascination Level: "Even though I may not feel strong in this intelligence, I am nevertheless *fascinated by it* (ranking of 9-10), *shy away from it* (ranking of 1-0)."
6. Personal Strength: "I feel that I am *good/skilled* (ranking of 9-10), *not good/weak* (ranking of 1-0) at tasks that require using this intelligence."

II. Now total the numbers in each of the vertical columns. What immediately strikes you as you look at the totals? What does this tell you about yourself? What concerns does it raise about your teaching?

III. Create two brainstorm lists. For the first, list at least five things you can do to use your own intelligence strengths more fully to help students with their daily classroom work. For the second, list at least five things you can do to "stretch" yourself and your teaching in areas of your own intelligence weaknesses to create a better balance in using all seven ways of knowing.

IV. Finally, create an implementation plan/timeline for putting your ideas from III above into action.

SELF-ANALYSIS CHART

	Verbal/ Linguistic	Logical/ Mathematical	Visual/ Spatial	Body/ Kinesthetic	Musical/ Rhythmic	Interpersonal	Intrapersonal
1							
2							
3							
4							
5							
6							

Postscript

In his book, *Control Theory in the Classroom*, William Glasser suggests that the number-one issue confronting American education today is that well over 50% of the students in our classrooms, day in and day out, have absolutely no desire to learn what we are trying to teach them. Moreover, he suggests that this is not their problem; it is ours as educators. Until we find a way to make getting an education worth their while, all of our efforts at curriculum restructuring and school reform may be little more than a diversion from what really needs to be done. In Glasser's opinion, we must find ways to make the "pay-off" for students greater if we are to make it worth their while to get an education.

So how do we approach the task of making education worth students' while? How do we increase the "pay-off" now? Glasser notes that all students come into our classrooms with five basic needs. And they will find a way to get these needs met, within the educational process or without it. These needs are:

Love: Students want to feel that they are loved and valued by others. They need to feel accepted and that they somehow belong.

Independence: Students want to experience a sense of freedom and independence. They need to experience that they can make decisions on their own.

Fun: Students want and need to enjoy the situation in which they find themselves and will very often go to extreme lengths to create fun if it is not present in large enough quantities.

Security: Students need to have a sense that things are right with the world. This need is much more difficult to fulfill today, given the lack of stability in many home situations.

Power: Students want to feel in control of what happens to them. They want to have a say in those things that are shaping their lives, even if it is only during a 45-minute class period.

If we could find ways to meet these five basic needs within the daily classroom teaching/learning situation, and if the "pay-off" of education was meeting and fulfilling these needs, then Glasser suggests that the percentage of students who are "on board with their education" would likely be far higher.

One of the reasons that I am so excited about teaching for, with, and about multiple intelligences is that I believe (and have witnessed in hundreds of schools and districts across North America), that this approach addresses these basic needs. I have seen students who have been failing in their studies suddenly experience new success. I have seen countless teachers experience a renewed excitement for their chosen profession. In fact, I would even suggest there may be no better way for transforming education today than teaching for, with, and about multiple intelligences. I have witnessed dramatic shifts in both students' and teachers' self-esteem as they discover ways to affirm their unique ways of knowing and learn that they are not "weird" or "strange" just because they do not excel in verbal/linguistic or logical/mathematical intelligence capacities.

In many ways, the following statement by William James says all that I have been trying to communicate in this fastback:

> I have no doubt whatever that most people live in a very restricted circle of their potential being . . . much like the person who should get into the habit of moving only the little finger out of the whole body organism. . . . there are vast reservoirs of life within us of which we have not dreamed.

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